Paper Mill reduces fresh water use by 36 million gallons/year using 3D TRASAR™ Technology for Dissolved Air Flotation

NALCO Water
An Ecolab Company

CASE STUDY – PAPER

CH-1463

BACKGROUND

A North American paper mill produces towel from recycled, sorted office waste (SOW) and de-inked market pulp. Over 4.5 million gallons of fresh water are consumed each week as part of the production process. The company continuously makes efforts to reduce its overall ecological footprint, and has made reduction of freshwater usage a major goal for the organization.

SITUATION

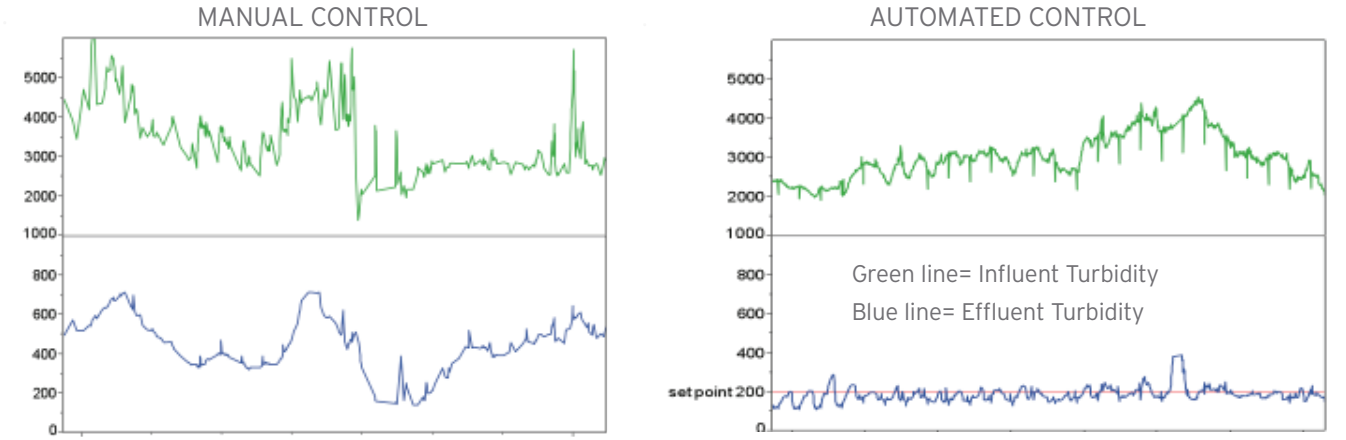
The mill had previously investigated reducing fresh water consumption by reusing the effluent from the dissolved air flotation unit (DAF) as vacuum pump seal water. However, the mill was experiencing inconsistent solids removal by the DAF, limiting their ability to reuse the effluent. DAF performance was severely limited as a result of the varying levels of furnish and hydraulic flow rate of the treated streams causing significant turbidity and TSS (Total Suspended Solids) load swings. As turbidity increased, chemical pumps were manually adjusted in an effort to compensate for the increased loading. These manual operations often led to periods of inadequate chemical treatment which resulted in poor effluent water quality, prompting the mill to send all DAF effluent water to the POTW.

SOLUTION

3D TRASAR Technology for DAF from Nalco Water was implemented to improve control and reduce variability in the effluent water quality. 3D TRASAR Technology for DAF uses advanced sensors to effectively automate DAF chemical control. The technology analyzes the influent flow rate, influent turbidity, and effluent turbidity in real time and optimizes the dosage of treatment chemistry to improve overall system performance with advanced proprietary feed forward and feedback control algorithms. Additional DAF operational data can be monitored

CUSTOMER IMPACT	eROI℠	ECONOMIC RESULTS
Reduced fresh water consumption by 16% from over 235 million gallons/ year to 198 million gallons year	WATER	$535,000 annual savings

eROI is our exponential value: the combined outcomes of improved performance, operational efficiency and sustainable impact delivered through our services and programs.



The green lines on the above graphs show the variation in influent turbidity. The corresponding blue lines show the effluent turbidity variations. Note that while the influent has high variability, 3D TRASAR technology provides effective control and predictable quality water that can be reused in process applications to reduce overall freshwater demand.

with automated alarming capability to notify the operations staff of sudden process changes. 3D TRASAR Technology for DAF provided the mill with the following benefits:

- Improved control and reduced variability in DAF effluent water quality allowing the water to be reused as vacuum pump seal water.
- Chemical treatment program optimization was achieved through a combination of feed forward and feedback control.
- Alarms notification was established to notify the operations team of critical process changes

RESULTS

3D TRASAR technology for DAF optimized the chemical treatment program, providing improved control and reduced variability in the effluent water quality of the DAF allowing it to be used as vacuum pump seal water. This reuse of the DAF effluent reduced fresh water consumption at the mill by 16% from over 235 million gallons/year to 198 million gallons/year, an annual savings of $535,000.

CONCLUSION

As a result of the successful implementation of 3D TRASAR Technology for DAF, the mill is considering additional potential process opportunities for DAF effluent reuse to further reduce freshwater consumption, including shower water, gland water, and tank level control water applications.

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